INCH-POUND

MIL-PRF-1/970E
27 August 1999
SUPERSEDING
MIL-E-1/970D
27 December 1976

PERFORMANCE SPECIFICATION SHEET

ELECTRON TUBE, GAS SWITCHING
TYPE 1B58A

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the electron tube described herein shall consist of this document and the latest issue of MIL-PRF-1.

DESCRIPTION: TR, bandpass, frequency range 2,664 to 2,964 MHz, incident power 750 kW.

ABSOLUTE RATINGS:

Parameter:	Incident power	Ebb (open circuit)	Alt
Unit:	kW	V dc	ft
Maximum	---	---	10,000
Minimum	10	-700	---

PHYSICAL CHARACTERISTICS: See figure 1.

TEST CONDITIONS:

Parameter: Unit:	F MHz	tp1 µs	tp2 µs	prr pps	Du ---	Incident power kW	Ii µA dc	Ri meg
Test condition 1:	F4 ±0.5%	1.0 ± 0.15	0.5 ± 0.15	1,000	---	200 ±10	200	1.6
Test condition 2:	F4 ±0.5%	1.0	---	1,000	0.001	50	200	1.6
Test condition 3:	F4 ±0.5%	---	---	---	0.0008	750 ±10%	200	1.6

Test frequencies	
F	MHz tolerance ± 0.1%
1	2664
2	2689
3	2714
4	2802
5	2914
6	2939
7	2964

GENERAL:

Qualification: Required.

TABLE I. Testing and inspection.

Requirement or test	Method	Test	Conditions	Symbol	Limits		Unit
					Min	Max	
Qualification inspection							
Degradation due to vibration	4021	---		---	---	---	---
High-level VSWR	4774	2	2/	---	---	1.15	---
Conformance inspection, part 1		---	5/				
Ignitor ignition time	4401	---	Ebb = -600 V dc	t	---	5.0	sec
Ignitor voltage drop	4406	---	Ii = 200 µA dc	Eid	200	400	V dc
Spike-leakage energy	4452	1	2/	Ws	---	0.3	erg
Flat-leakage power	4452	1	2/	pf	---	40	mw
Temperature cycling (nonoperating)	1027	---	1 cycle	---	---	---	---
Low-level VSWR	4473	---	F1 F2 to F3 F3 to F5 F5 to F6 F7 1/ 3/	--- --- --- --- ---	--- --- --- --- ---	1.65 1.2 1.3 1.2 1.65	--- --- --- --- ---
Conformance inspection, part 2							
Dielectric material strain	4101	---		---	---	---	---
Pressurizing	4003	---	50 lb_f/in^2 4/	---	---	---	---
Insertion loss (fixed tuned)	4416	---	F4; Ii = 0 1/	Li	---	0.3	dB
Ignitor interaction (insertion loss)	4421	---	Ii = 200 µA dc	Li	---	0.1	dB
Recovery time	4471	3	Ii = 200 µA dc 2/	t	---	15	µs
Insertion	---	---	6/	---	---	---	---

See footnotes at end of table.

TABLE I. Testing and inspection - Continued.

Requirement or test	Method	Test	Conditions	Symbol	Limits		Unit
					Min	Max	
Conformance inspection, part 3							
Life test	---	3	Group D; Ii = 150 to 200 µA dc 2/	t	500	---	hrs
Life test end points:	---						
Insertion loss (fixed tuned)	4416	---	F4; Ii = 0 1/	Li	---	1.0	dB
Spike-leakage energy	4452	1	2/	Ws	---	0.3	erg
Flat-leakage power	4452	1	2/	pf	---	40	mW
Recovery time	4471	3	2/	t	---	30	µs
Temperature cycling life-test end point	1027	---	Group C; 10 cycles	---	---	---	---

1/ This test shall be performed using the flanges specified in Drawing 268-JAN.

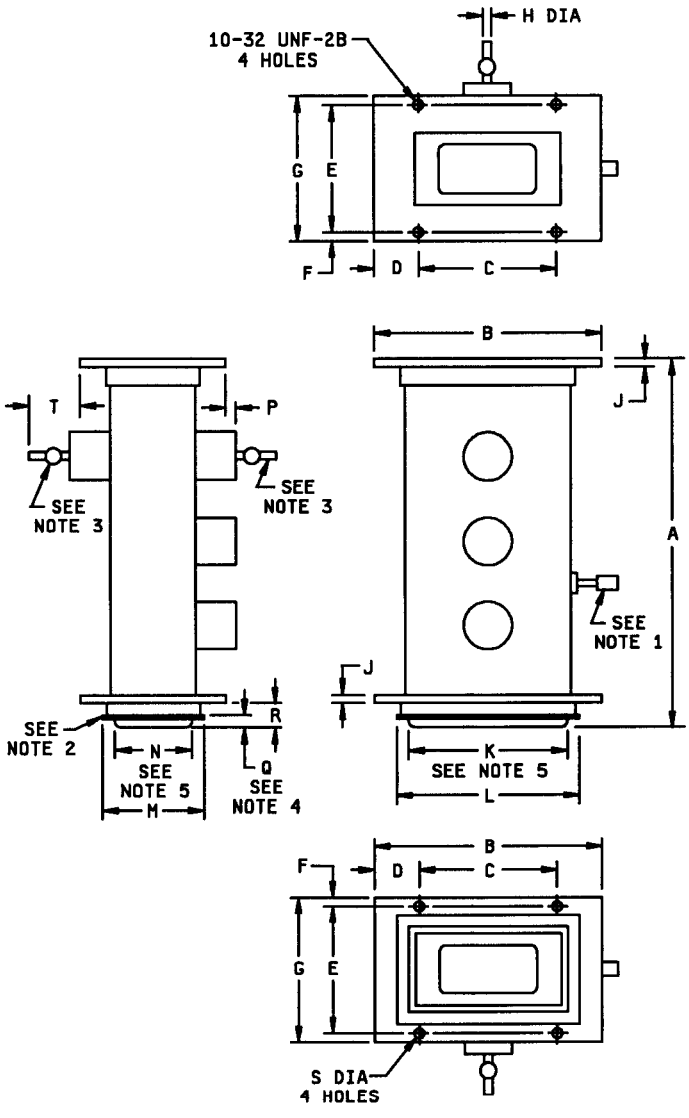
2/ This test shall be performed using the mount specified in Drawing 153-JAN.

3/ A swept frequency method of measurement may be used instead of measurement at fixed frequencies.

4/ The tube shall be mounted in accordance with Drawing 208-JAN, and the complete assembly cycled once from -55°C to +100°C. After the temperature has again reached room temperature, the pressure shall not have changed more than one-quarter of a pound/in^2 as indicated by a gauge permanently connected into the system.

5/ Unless otherwise specified, the acceptance level for all tests listed under conformance inspection, part 1, shall be 1.0, in accordance with the accept on zero (c = 0) sampling plans (Table III of MIL-PRF-1).

6/ The tube shall be capable of being inserted and removed from the mount specified in Drawing 153-JAN a minimum of 15 times with no deterioration in the tube's electrical characteristics.



Ltr	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
Conformance inspection, part 1 5/				
A	6.580	6.640	167.13	168.66
K	---	3.008	---	76.40
P	---	.190	---	4.83
Q	.165	.195	4.19	4.95
R	.347	.377	8.81	9.58
T	---	.810	---	20.57
Conformance inspection, part 2				
C	2.490	2.510	63.25	63.75
E	2.240	2.260	56.90	57.40
L	3.203	3.233	81.36	82.12
M	1.703	1.733	43.26	44.02
N	---	1.508	---	38.30
Reference dimensions				
B	4.12		104.65	
D	.81		20.57	
F	.19		4.83	
G	2.62		66.55	
H	.25		6.35	
J	.12		3.05	
S	.22		5.59	

NOTES:

1. Exhaust tube shall not extend beyond flange more than .25 inch (6.35 mm).
2. Gasket in accordance with Drawing 189-JAN. Gasket to be securely attached.
3. Ignitor electrode may be mounted in either of positions shown.
4. Dimension Q shall be measured prior to the attachment of the gasket to the tube.
5. The edges of the input window plate shall have either a radius of .020 inches (.51 mm) minimum or a 45° chamfer of .020 inch (.51 mm) minimum.
6. Mount either series or shunt mount may be used. If series mount is used, mount shall be in accordance with Drawing 153-JAN.
7. Unless otherwise specified, the acceptance level for all tests listed under conformance inspection, part 1, shall be 1.0, in accordance with the accept on zero (c = 0) sampling plans (Table III of MIL-PRF-1).

FIGURE 1. Outline drawing of electron tube type 1B58A.

Custodians:
Army - CR
Navy - EC
Air Force - 11
DLA - CC

Review activities:
Navy - AS, CG, MC, OS, SH

Preparing activity:
DLA - CC

(Project 5960-3551-15)